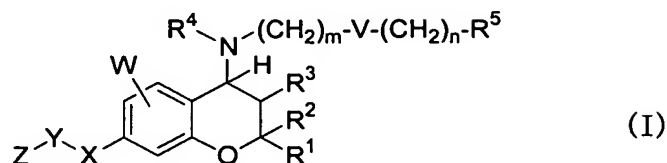


## CLAIMS

1. A benzopyran compound of formula (I)



wherein

X is  $\text{NR}^6$  wherein  $\text{R}^6$  is hydrogen atom or  $\text{C}_{1-4}$  alkyl group;

Y is a bond, SO or  $\text{SO}_2$ ;

Z is  $\text{C}_{1-4}$  alkyl group (wherein the  $\text{C}_{1-4}$  alkyl group may be arbitrarily substituted with 1 to 5 halogen atoms or phenyl group (wherein the phenyl group may be arbitrarily substituted with  $\text{C}_{1-4}$  alkyl group)) or phenyl group (wherein the phenyl group may be arbitrarily substituted with  $\text{C}_{1-4}$  alkyl group);

W is hydrogen atom, hydroxy group,  $\text{C}_{1-6}$  alkoxy group (wherein the  $\text{C}_{1-6}$  alkoxy group may be arbitrarily substituted with halogen atom), halogen atom,  $\text{C}_{1-4}$  alkyl group or  $\text{C}_{1-6}$  alkylsulfonylamino group;

$\text{R}^1$  and  $\text{R}^2$  are independently of each other  $\text{C}_{1-3}$  alkyl group (wherein the  $\text{C}_{1-3}$  alkyl group may be arbitrarily substituted with hydroxy group, methoxy group, halogen atom or trifluoromethoxy group);

$\text{R}^3$  is hydrogen atom, hydroxy group or methoxy group;

m is an integer of 0 to 4;

n is an integer of 0 to 4;

V is a single bond,  $\text{CR}^7\text{R}^8$  wherein  $\text{R}^7$  is

-  $\text{C}_{1-6}$  alkyl group (wherein the  $\text{C}_{1-6}$  alkyl group may be arbitrarily substituted with halogen atom, hydroxy group,  $\text{C}_{1-6}$  alkoxy group (wherein the  $\text{C}_{1-6}$  alkoxy group may be arbitrarily substituted with halogen atom),  $\text{C}_{6-14}$  aryl group or  $\text{C}_{2-9}$  heteroaryl group (wherein each of the  $\text{C}_{6-14}$  aryl group or  $\text{C}_{2-9}$  heteroaryl group may be arbitrarily substituted with 1 to 3  $\text{R}^{10}$  wherein  $\text{R}^{10}$  is halogen atom; hydroxy group;  $\text{C}_{1-6}$  alkyl group (wherein the  $\text{C}_{1-6}$  alkyl group may be arbitrarily substituted with halogen atom, hydroxy group or  $\text{C}_{1-6}$  alkoxy group (wherein the  $\text{C}_{1-6}$  alkoxy group may be arbitrarily substituted with halogen atom)));  $\text{C}_{1-6}$  alkoxy group (wherein the  $\text{C}_{1-6}$  alkoxy group may be arbitrarily substituted with halogen atom); nitro group; cyano group; formyl group; formamide group; sulfonylamino group; sulfonyl group; amino group;  $\text{C}_{1-6}$  alkylamino group; di- $\text{C}_{1-6}$  alkylamino group;  $\text{C}_{1-6}$

alkylcarbonylamino group; C<sub>1-6</sub> alkylsulfonylamino group; aminocarbonyl group; C<sub>1-6</sub> alkylaminocarbonyl group; di-C<sub>1-6</sub> alkylaminocarbonyl group; C<sub>1-6</sub> alkylcarbonyl group; C<sub>1-6</sub> alkoxy carbonyl group; aminosulfonyl group; C<sub>1-6</sub> alkylsulfonyl group; carboxy group or C<sub>6-14</sub> arylcarbonyl group, and when a plurality of R<sup>10</sup> are present, they may be identical or different from each other), C<sub>6-14</sub> aryl group or C<sub>2-9</sub> heteroaryl group (wherein each of the C<sub>6-14</sub> aryl group or C<sub>2-9</sub> heteroaryl group may be arbitrarily substituted with 1 to 3 R<sup>10</sup> wherein R<sup>10</sup> has the above-mentioned meaning));

- hydroxy group or

- C<sub>1-6</sub> alkoxy group (wherein the C<sub>1-6</sub> alkoxy group may be arbitrarily substituted with halogen atom), and R<sup>8</sup> is

- hydrogen atom,

- C<sub>1-6</sub> alkyl group (wherein the C<sub>1-6</sub> alkyl group may be arbitrarily substituted with halogen atom, hydroxy group, C<sub>1-6</sub> alkoxy group (wherein the C<sub>1-6</sub> alkoxy group may be arbitrarily substituted with halogen atom)),

- C<sub>6-14</sub> aryl group or C<sub>2-9</sub> heteroaryl group (wherein each of the C<sub>6-14</sub> aryl group or C<sub>2-9</sub> heteroaryl group may be arbitrarily substituted with 1 to 3 R<sup>11</sup> wherein R<sup>11</sup> is halogen atom; hydroxy group; C<sub>1-6</sub> alkyl group (wherein the C<sub>1-6</sub> alkyl group may be arbitrarily substituted with halogen atom, hydroxy group or C<sub>1-6</sub> alkoxy group (wherein the C<sub>1-6</sub> alkoxy group may be arbitrarily substituted with halogen atom)));

C<sub>1-6</sub> alkoxy group (wherein the C<sub>1-6</sub> alkoxy group may be arbitrarily substituted with halogen atom); nitro group; cyano group; formyl group; formamide group; sulfonylamino group; sulfonyl group; amino group; C<sub>1-6</sub> alkylamino group; di-C<sub>1-6</sub> alkylamino group; C<sub>1-6</sub> alkylcarbonylamino group; C<sub>1-6</sub> alkylsulfonylamino group; aminocarbonyl group; C<sub>1-6</sub> alkylaminocarbonyl group; di-C<sub>1-6</sub> alkylaminocarbonyl group; C<sub>1-6</sub> alkylcarbonyl group; C<sub>1-6</sub> alkoxy carbonyl group; aminosulfonyl group; C<sub>1-6</sub> alkylsulfonyl group; carboxy group or C<sub>6-14</sub> arylcarbonyl group, and when a plurality of R<sup>11</sup> are present, they may be identical or different from each other),

- hydroxy group or

- C<sub>1-6</sub> alkoxy group (wherein the C<sub>1-6</sub> alkoxy group may be arbitrarily substituted with halogen atom), or R<sup>7</sup> together with R<sup>8</sup> may represent O or S, or

V is NR<sup>9</sup> wherein R<sup>9</sup> is hydrogen or C<sub>1-6</sub> alkyl group (wherein the C<sub>1-6</sub> alkyl group may be arbitrarily substituted with halogen atom, C<sub>1-6</sub> alkoxy group (wherein the C<sub>1-6</sub> alkoxy group may be arbitrarily substituted with halogen atom), hydroxy group, C<sub>6-14</sub> aryl group or C<sub>2-9</sub> heteroaryl group (wherein each of the C<sub>6-14</sub> aryl group or

C<sub>2-9</sub> heteroaryl group may be arbitrarily substituted with 1 to 3 R<sup>11</sup> wherein R<sup>11</sup> has the above-mentioned meaning)); or O, S, SO or SO<sub>2</sub>;

R<sup>4</sup> is hydrogen or C<sub>1-6</sub> alkyl group (wherein the C<sub>1-6</sub> alkyl group may be arbitrarily substituted with halogen atom, C<sub>1-6</sub> alkoxy group (wherein the C<sub>1-6</sub> alkoxy group may be arbitrarily substituted with halogen atom), or hydroxy group); and

R<sup>5</sup> is

- hydrogen atom,
- C<sub>1-6</sub> alkyl group (wherein the C<sub>1-6</sub> alkyl group may be arbitrarily substituted with halogen atom, C<sub>1-6</sub> alkoxy group (wherein the C<sub>1-6</sub> alkoxy group may be arbitrarily substituted with halogen atom), amino group, carboxy group or hydroxy group),
- C<sub>3-8</sub> cycloalkyl group or C<sub>3-8</sub> cycloalkenyl group (wherein the C<sub>3-8</sub> cycloalkyl group or C<sub>3-8</sub> cycloalkenyl group may be arbitrarily substituted with halogen atom, C<sub>1-6</sub> alkyl group (wherein the C<sub>1-6</sub> alkyl group may be arbitrarily substituted with halogen atom, C<sub>1-6</sub> alkoxy group (wherein the C<sub>1-6</sub> alkoxy group may be arbitrarily substituted with halogen atom), amino group, carboxy group or hydroxy group), C<sub>1-6</sub> alkoxy group (wherein the C<sub>1-6</sub> alkoxy group may be arbitrarily substituted with halogen atom), amino, carboxy group or hydroxy group), or
- C<sub>6-14</sub> aryl group or C<sub>2-9</sub> heteroaryl group (wherein each of the C<sub>6-14</sub> aryl group or C<sub>2-9</sub> heteroaryl group may be arbitrarily substituted with 1 to 3 R<sup>12</sup> wherein R<sup>12</sup> is halogen atom; hydroxy group; C<sub>1-6</sub> alkyl group (wherein the C<sub>1-6</sub> alkyl group may be arbitrarily substituted with halogen atom, hydroxy group or C<sub>1-6</sub> alkoxy group (wherein the C<sub>1-6</sub> alkoxy group may be arbitrarily substituted with halogen atom)); C<sub>1-6</sub> alkoxy group (wherein the C<sub>1-6</sub> alkoxy group may be arbitrarily substituted with halogen atom); nitro group; cyano group; formyl group; formamide group; sulfonylamino group; sulfonyl group; amino group; C<sub>1-6</sub> alkylamino group; di-C<sub>1-6</sub> alkylamino group; C<sub>1-6</sub> alkylcarbonylamino group; C<sub>1-6</sub> alkylsulfonylamino group; aminocarbonyl group; C<sub>1-6</sub> alkylaminocarbonyl group; di-C<sub>1-6</sub> alkylaminocarbonyl group; C<sub>1-6</sub> alkylcarbonyl group; C<sub>1-6</sub> alkoxy carbonyl group; aminosulfonyl group; C<sub>1-6</sub> alkylsulfonyl group; carboxy group, C<sub>6-14</sub> aryl carbonyl group, ureido group, C<sub>1-6</sub> alkylureilene group, C<sub>6-14</sub> aryl C<sub>1-6</sub> alkylamino group, C<sub>1-6</sub> alkoxy carbonylamino group, C<sub>6-14</sub> aryloxy group or C<sub>6-14</sub> aryl carbonylamino group, when a plurality of R<sup>12</sup> are present, they may be identical or different from each other).

2. The benzopyran compound according to claim 1, wherein both R<sup>1</sup> and R<sup>2</sup> are methyl group, R<sup>3</sup> is hydroxy group, and V is a single bond.

3. The benzopyran compound according to claim 1, wherein both  $R^1$  and  $R^2$  are methyl group,  $R^3$  is hydroxy group, and V is  $CR^7R^8$ .
4. The benzopyran compound according to claim 1, wherein both  $R^1$  and  $R^2$  are methyl group,  $R^3$  is hydroxy group, and V is  $NR^9$ .
5. The benzopyran compound according to claim 2, wherein  $R^5$  is  $C_{1-6}$  alkyl group,  $C_{3-8}$  cycloalkyl or  $C_{6-14}$  aryl.
6. The benzopyran compound according to claim 3, wherein  $R^5$  is  $C_{1-6}$  alkyl group,  $C_{3-8}$  cycloalkyl or  $C_{6-14}$  aryl.
7. The benzopyran compound according to claim 4, wherein  $R^5$  is  $C_{1-6}$  alkyl group,  $C_{3-8}$  cycloalkyl or  $C_{6-14}$  aryl.
8. The benzopyran compound according to claim 5, wherein W is hydrogen atom, hydroxy group, methoxy group, chlorine atom, bromine atom, methyl group, ethyl group or methylsulfonylamino group.
9. The benzopyran compound according to claim 6, wherein W is hydrogen atom, hydroxy group, methoxy group, chlorine atom, bromine atom, methyl group, ethyl group or methylsulfonylamino group.
10. The benzopyran compound according to claim 8, wherein  $R^5$  is  $C_{1-6}$  alkyl group or  $C_{6-14}$  aryl,  $R^6$  is hydrogen atom or methyl group, Y is  $SO_2$ , and Z is  $C_{1-4}$  alkyl group.
11. The benzopyran compound according to claim 8, wherein  $R^5$  is  $C_{1-6}$  alkyl group or  $C_{6-14}$  aryl,  $R^6$  is hydrogen atom or methyl group, Y is a bond, and Z is  $C_{1-4}$  alkyl group.
12. A benzopyran compound which is N- $\{(3R^*, 4S^*)$ -3-hydroxy-6-methoxy-2,2-dimethyl-4-[(2-phenylethyl)amino]-3,4-dihydro-2H-1-benzopyran-7-yl)-methanesulfonamide.

13. A benzopyran compound which is N- $\{(3R^*, 4S^*)$ -3,6-dihydroxy-2,2-dimethyl-4-[(2-phenylethyl)amino]-3,4-dihydro-2H-1-benzopyran-7-yl} methanesulfonamide.
14. A benzopyran compound which is N- $\{(3R^*, 4S^*)$ -3-hydroxy-6-methoxy-2,2-dimethyl-4-[(2-phenylethyl)amino]-3,4-dihydro-2H-1-benzopyran-7-yl}-N-methylmethanesulfonamide.
15. A benzopyran compound which is N- $\{(3R^*, 4S^*)$ -4-[(2-cyclohexylethyl)amino]-3-hydroxy-6-methoxy-2,2-dimethyl-3,4-dihydro-2H-1-benzopyran-7-yl} methanesulfonamide.
16. A benzopyran compound which is N- $\{(3R^*, 4S^*)$ -3-hydroxy-6-methoxy-2,2-dimethyl-4-(pentylamino)-3,4-dihydro-2H-1-benzopyran-7-yl} methanesulfonamide.
17. A benzopyran compound which N- $\{(3R^*, 4S^*)$ -3-hydroxy-2,2,8-trimethyl-4-[(2-phenylethyl)amino]-3,4-dihydro-2H-1-benzopyran-7-yl} methanesulfonamide.
18. A benzopyran compound which is N- $\{(3R^*, 4S^*)$ -3-hydroxy-2,2-dimethyl-4-[(2-phenylethyl)amino]-3,4-dihydro-2H-benzopyran-7-yl} methanesulfonamide maleate.
19. A benzopyran compound which is N- $\{(3R^*, 4S^*)$ -3-hydroxy-2,2-dimethyl-4-[(2-phenylethyl)amino]-3,4-dihydro-2H-benzopyran-7-yl} ethanesulfonamide hydrochloride.
20. A benzopyran compound which is 1,1,1-trifluoro-N- $\{(3R^*, 4S^*)$ -3-hydroxy-2,2-dimethyl-4-[(2-phenylethyl)amino]-3,4-dihydro-2H-benzopyran-7-yl}- methanesulfonamide maleate.
21. A benzopyran compound which is N- $\{(3R^*, 4S^*)$ -3-hydroxy-2,2-dimethyl-4-[(2-phenylethyl)amino]-3,4-dihydro-2H-benzopyran-7

-yl)-N-methylmethanesulfonamide hydrochloride.

22. A benzopyran compound which is N-((3*R*\*, 4*S*\*)-6-bromo-3-hydroxy-2,2-dimethyl-4-[(2-phenylethyl)amino]-3,4-dihydro-2H-benzopyran-7-yl)-methanesulfonamide.

23. A benzopyran compound which is (3*R*\*, 4*S*\*)-2,2-dimethyl-7-dimethylamino-4-[(2-phenylethyl)amino]-3-chroman-3-ol hydrochloride.

24. A benzopyran compound which is (3*R*\*, 4*S*\*)-2,2-dimethyl-7-methylamino-4-[(2-phenylethyl)amino]-3-chroman-3-ol hydrochloride.

25. A benzopyran compound which is (3*R*\*, 4*S*\*)-4-[[2-(4-fluorophenyl)ethyl]amino]-2,2-dimethyl-7-dimethylamino-3-chroman-3-ol hydrochloride.

26. A benzopyran compound which is (3*R*\*, 4*S*\*)-6-methoxy-2,2-dimethyl-7-dimethylamino-4-[(2-phenylethyl)amino]-3-chroman-3-ol.

27. A benzopyran compound which is (3*R*\*, 4*S*\*)-6-methoxy-2,2-dimethyl-7-methylamino-4-[(2-phenylethyl)amino]-3-chroman-3-ol hydrochloride.

28. A benzopyran compound which is N-((3*R*\*, 4*S*\*)-3-hydroxy-2,2-dimethyl-4-[(2-phenylethyl)amino]-3,4-dihydro-2H-benzopyran-7-yl)-4-methylbenzenesulfonamide.

29. A benzopyran compound which is N-((3*R*\*, 4*S*\*)-3-hydroxy-2,2-dimethyl-6-[(methylsulfonyl)amino]-4-[(2-phenylethyl)amino]-3,4-dihydro-2H-benzopyran-7-yl)-methanesulfonamide.

30. A benzopyran compound which is (3*R*\*,

4*S*<sup>\*</sup>)-2,2-dimethyl-7-methylethylamino-4-[(2-phenylethyl)amino]-3-chroman-  
ol hydrochloride.

31. A benzopyran compound which is N-[(3*R*<sup>\*</sup>,  
4*S*<sup>\*</sup>)-3-hydroxy-2,2-dimethyl-4-[(2-phenylethyl)amino]-3,4-dihydro-2H-chromen-7-yl]  
-N-isopropylmethanesulfonamide hydrochloride.

32. A pharmaceutical characterized by comprising the benzopyran compound  
according to any one of claims 1 to 31 or pharmaceutically acceptable salt thereof  
as an active ingredient.

33. A pharmaceutical for treating arrhythmia characterized by comprising the  
benzopyran compound according to any one of claims 1 to 31 or pharmaceutically  
acceptable salt thereof as an active ingredient.